TO STUDY AND SIMULATE THE CONCEPT OF RAMJET

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"I declared that this thesis is the result of my own work except the ideas and summaries which I have clarified their sources. The thesis has not been accepted for any degree and is not currently submitted in candidature of any degree."

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ABSTRACT

Ramjet engine is a kind of jet engine that use the forward motion of the engine to ramp the ambient air been swallowed into the engine. The diffuser inlet design plays an important factor to produce the compression effect in parallel to the speed of the forward motion. The concept of the ramjet engine has been studied and one simple ideal ramjet engine has been developed. The ramjet engine has been prototyped to be used for the experimental simulation. The performance characteristic of the prototyped ramjet engine is to be obtained as an objective of this project. The test rig has been designed and fabricated. Out-design condition experimental simulation has been performed to simulate the performance of the ramjet. The ramjet engine has fails to be tested at supersonic condition because of the airflow supply system was not reliable to produced supersonic airflow where the hose joint was not strong enough. The ramjet has been tested at subsonic condition at airflow rate between 0 to 211.1 g/s. Ethanol with stoichiometric air-fuel ratio of 9 has been used as fuel. The maximum fuel flow rate that could be supplied was 2.34 g/s which require 21.06 g/s of air to be stoichiometric. No significant thrust produced by the ramjet at this subsonic condition. The supply fuel flow rate must be increased in order to obtained bigger thrust.

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